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The US EM Aerospace Technology Landscape

Abstract

Over the past 10 years, new trends have fundamentally re-shaped the workflow for EM engineers at American aerospace companies. The business processes invented in Silicon Valley have emerged as a requirement for aerospace companies to adopt as they face increased competition from new entrants. New ways of thinking and management include faster design cycles for proofs of concept followed by continuous iteration, new collaboration technologies, and a greater focus on using software to solve problems previously outside of the software domain. This disruption is joined by the universal adoption of product lifecycle management (PLM) systems that require a high-level of interoperability and a focus on change management. EM engineers must learn to use 3D geometry in a practical way in their work progress without letting the complexity of handling the full CAD overwhelm their design cycles. Indeed, the new business processes mean that RF and EM engineers must do more in an increasingly shorter period, while requiring them to do the work on complex models traceable to the master CAD. This can easily overwhelm groups that are accustomed to working with far simpler models or performing spreadsheet analyses. In this talk, we discuss ways EM software has evolved to meet the challenge. This includes automating tasks that were previously done by engineers, new software methods to allow CAE analysis with limited information and solver performance boosts that make previously unattainable problems more computationally-accessible.

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Tim McDonald is Chief Scientist of Electro Magnetic Applications, Inc. (EMA) where he leads a team of scientists and engineers in technical consulting engagements with large aerospace and defense integrators around the world. He currently is responsible for firm management, directing technical efforts and business development. He is a subject matter expert in lightning, EMC and space electromagnetics.

Dr. McDonald has helped advance and bring to wider use new approaches to design and certification of air and spacecraft via numerical simulation. He has managed projects for Lockheed Martin Space System, Bell Helicopter Textron Inc., SpaceX, Orbital-ATK Inc., and many other aerospace integrators. He has served in a product management role for a successful numerical simulation tool, EMA3D.